

Application No.: 10/028553

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Remarks

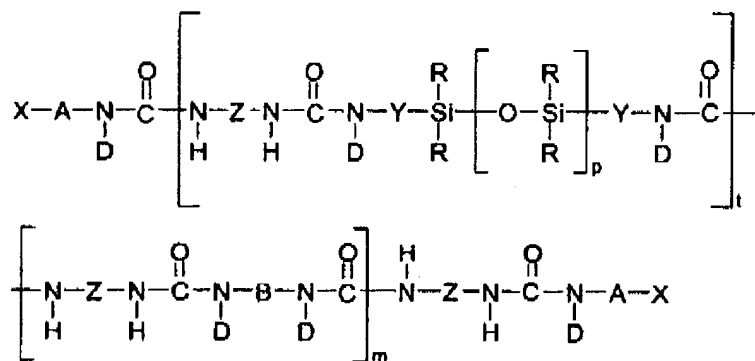
Claims 1, 3 – 8, 10 – 21, 23 – 36, and 38 – 45 are pending. Claims 1, 18, 19, and 36 are being amended.

Applicants are hereby amending claims 1, 18, 19, and 36 to recite the limitation that the polydiorganosiloxane polyurea copolymer has a mole ratio of isocyanate to amine in a range of about 0.9:1 to about 1.1:1 (basis therefor being found, for example, at 5, lines 17 – 18).

Rejections under § 102/103

Claims 1 – 3, 7, 10, 13 – 20, 22, 23, 27, and 29 – 45 have been rejected under § 102(b) as being anticipated by or, in the alternative, under § 103(a) as being obvious over WO 96/34028 (Sherman et al.). The rejections are traversed for the following reasons.

Sherman discloses a curable tackified polydiorganosiloxane oligourea segmented copolymer comprising (a) soft polydiorganosiloxane units, hard polyisocyanate residue units, wherein the polyisocyanate residue is the polyisocyanate minus the –NCO groups, optionally, soft and/or hard organic polyamine units, wherein the residues of isocyanate units and amine units are connected by urea linkages, and terminal groups, wherein the terminal groups are functional encapping groups, and (b) silicate resins. Sherman's curable tackified polydiorganosiloxane oligourea segmented copolymer can be represented by the repeating unit of the following formula:



wherein:

each R is a monovalent moiety which independently is an alkyl moiety which may be substituted with trifluoroalkyl or vinyl groups, a vinyl radical or higher alkenyl radical represented

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by the formula $R^2(CH_2)_aCH=CH_2$ wherein R^2 is $-(CH_2)_b-$ or $-(CH_2)_cCH=CH-$ and a is 1, 2, or 3; b is 0, 3, or 6; and c is 3, 4, or 5, a cycloalkyl moiety preferably having about 6 to 12 carbon atoms and which may be substituted with alkyl, fluoroalkyl, and vinyl groups, or an aryl moiety which may be substituted with, for example, alkyl cycloalkyl, fluoroalkyl and vinyl groups or R is a perfluoroalkyl group, a fluorine-containing group, or a perfluoroether-containing group;

each Z is a polyvalent radical which is an arylene radical or an aralkylene radical having from about 6 to 20 carbon atoms, an alkylene or cycloalkylene radical having from about 6 to 20 carbon atoms;

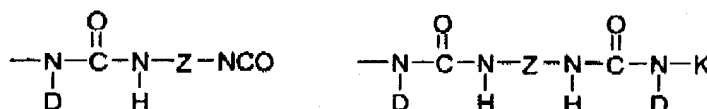
each Y is a divalent moiety which independently is an alkylene radical having 1 to 10 carbon atoms, an aralkylene radical or an arylene radical having 6 to 20 carbon atoms;

each A is independently $-B-$, or $-YSi(R)_2(OSi(R)_2)_pY-$ or mixtures thereof;

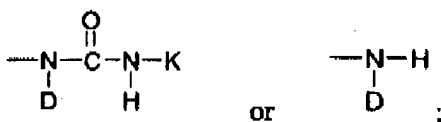
B is a polyvalent radical selected from the group consisting of alkylene, aralkylene, cycloalkylene, phenylene, polyalkylene oxide, and copolymers thereof, and mixtures thereof;

each D is a monovalent radical which independently is hydrogen, an alkyl radical having 1 to 10 carbon atoms or an aryl or arylalkyl radical having about 6 to 20 carbon atoms;

each X is a moiety represent by one of the following formulas:



K is independently (i) a free radical polymerizable end group, (ii) a moisture curable group, or (iii) a moiety represented by



m is about 0 to 8;

p is about 10 or larger; and

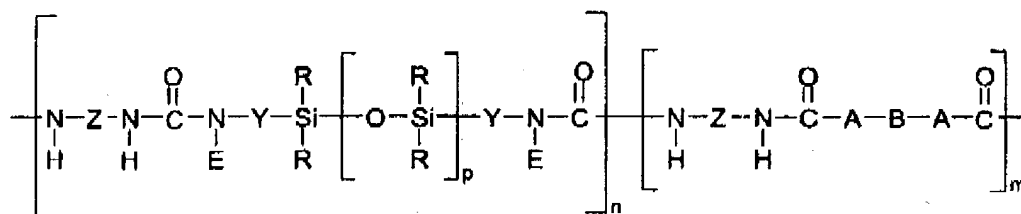
t is about 1 to 12.

Applicants disclose a pressure sensitive adhesive comprising a silicone tackifying resin; a polydiorganosiloxane polyurea copolymer, wherein the mole ratio of isocyanate to amine is in a

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range of about 0.9:1 to about 1.1:1; and a plasticizer; wherein the silicone tackifying resin and polydiorganosiloxane polyurea copolymer are generally uniformly distributed; the pressure sensitive adhesive is organic solvent-based; the silicone tackifying resin is present in an amount of at least about 55 wt-%, based on the weight of the silicone tackifying resin and the polydiorganosiloxane polyurea copolymer; and the plasticizer is present in an amount sufficient to provide a generally uniform distribution of the polydiorganosiloxane polyurea copolymer and the silicone tackifying resin. Applicants' polydiorganosiloxane polyurea copolymer can, for example, comprise the following repeating unit:



wherein:

each R is independently an alkyl moiety, a vinyl moiety or higher alkenyl moiety, a cycloalkyl moiety, an aryl moiety, or a fluorine-containing group;

each Z is independently a polyvalent moiety that is an arylene moiety, an aralkylene moiety, an alkylene moiety, or a cycloalkylene moiety;

each Y is independently a polyvalent moiety that independently is an alkylene moiety, an aralkylene moiety or an arylene moiety;

each E is independently hydrogen, an alkyl moiety of 1 to 10 carbon atoms, phenyl, or a moiety that completes a ring structure including Y to form a heterocycle;

each A is independently oxygen or -N(G)-, wherein each G is independently hydrogen, an alkyl moiety of 1 to 10 carbon atoms, phenyl, or a moiety that completes a ring structure including B to form a heterocycle;

B is an alkylene, aralkylene, cycloalkylene, phenylene, polyalkylene, polyalkylene oxide, copolymers, or mixtures thereof, or a moiety completing a ring structure including A to form a heterocycle;

m is a number that is 0 to about 1000:

n is a number that is equal to or greater than 1:

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and p is a number that is about 5 or larger.

The Examiner has asserted that the formula of Sherman can also include Applicants' claimed formula. Even before Applicants present amendment, the formula of Sherman cannot include Applicants' claimed formula. Applicants' claimed invention comprises polydiorganosiloxane polyurea copolymer. As disclosed on page 85, lines 26 – 27 of Applicants' specification, the polydiorganosiloxane copolymer of the invention is a polymer where the polyisocyanate groups and the polyamine groups are connected by urea linkages. In contrast, the tackified compositions of Sherman comprise a "curable polydiorganosiloxane oligourea segmented copolymer." The use of the term "copolymer" in Sherman is somewhat confusing. It appears that the term is actually meant to refer to B in formula I (wherein B is a polyvalent radical selected from the group consisting of alkylene, aralkylene, cycloalkylene, phenylene, polyalkylene oxide, and copolymers thereof, and mixtures thereof). In fact, Sherman's curable polydiorganosiloxane oligourea segmented copolymer could be correctly described as a "co-oligomer." The curable polydiorganosiloxane oligourea segmented copolymer disclosed in Sherman has end groups that are reactive under free radical or moisture cure conditions (for example, such reactive end groups are described in Sherman at page 12, lines 5 – 25). In other words, the curable polydiorganosiloxane oligourea segmented copolymer disclosed in Sherman is capped, or terminated, on both ends.

Sherman discloses two ways of obtaining the desired degree of oligomerization: (1) control the isocyanate to amine ratio to obtain either isocyanate or amine capped oligomer, and (2) judiciously select the amount of monoamine or monoisocyanate endpaper with stoichiometric amounts of isocyanate and amine (see page 13, lines 10 – 14).

Applicants' therefore submit that their unamended claims were patentable over Sherman. Nevertheless, in order to advance prosecution, Applicants have amended their claims to recite the limitation that the polydiorganosiloxane polyurea copolymer has a mole ratio of isocyanate to amine in a range of about 0.9:1 to about 1.1:1. According to the table at page 13 of Sherman, the isocyanate:amine mole ratios are (a) 3:2, (b) 3:4, (c) 3:2, or (d) 1:2. The recalculated isocyanate:amine ratios of Sherman are (a) 1.5:1, (b) 0.75:1, (c) 1.5:1, and (d) 0.5:1 wherein the oligourea segmented copolymer is encapped with isocyanate or amine. Thus, Sherman discloses for an amine endcapped oligourea segmented copolymer, the mole ratio of isocyanate to 1 mole

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of amine ranges from 0.5 to 0.75. For an isocyanate encapped oligourea segmented copolymer, the ratio of isocyanate to amine ranges from 1.5 to 1. In other words, the isocyanate or the amine is run in substantial excess during the reaction in order to provide an encapped oligourea segmented copolymer.

Therefore, for this reason and the reasons provided in Applicants' previous communications, Sherman does not teach or suggest the claimed invention. Applicants respectfully request that the rejections under §§102/103 based on Sherman be withdrawn.

Rejections under § 103

Claims 8, 11, 12, 21, and 28 have been rejected under § 103(a) as being unpatentable over WO 96/34028 (Sherman et al.). The rejection is traversed for the following reasons.

For the reasons discussed above, Applicants submit that claims 8, 11, 12, 21, and 28 are also patentable over Sherman and respectfully request that the rejection under § 103 be withdrawn.

Claims 4 – 6 and 24 – 26 have been rejected under § 103(a) as being unpatentable over WO 96/34028 (Sherman et al.) in view of US Patent No. 5,776,614 (Cifuentes et al.). The rejection is traversed for the following reasons.

Neither Sherman nor Cifuentes appear to teach or suggest a polydiorganosiloxane polyurea copolymer having a mole ratio of isocyanate to amine in a range of about 0.9:1 to about 1.1:1. Applicants therefore respectfully request that the rejection under § 103 based upon Sherman in view of Cifuentes be withdrawn.

Claims 1 – 7, 10, 13 – 20, 22 – 27, and 29 – 45 have been rejected under § 103(a) as being unpatentable over WO 96/34028 (Sherman et al.) in view of US Patent No. 4,882,377 (Sweet et al.). The rejection is traversed for the following reasons.

Neither Sherman nor Sweet appears to teach or suggest a polydiorganosiloxane polyurea copolymer having a mole ratio of isocyanate to amine in a range of about 0.9:1 to about 1.1:1. Applicants therefore respectfully request that the rejection under § 103 based upon Sherman in view of Sweet be withdrawn.

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Concluding Remarks

In view of the above, it is submitted that the application is in condition for allowance.
Reconsideration and allowance of Applicants' claims are respectfully requested.

Respectfully submitted,

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